REMARKS

Upon entry of this amendment, claims 1-23 will be pending in the application. By this paper, claim 12 has been amended and new claims 21-23 have been added. No new matter is added by any of these amendments. The rewritten claims, marked up to show all the changes relative to the previous version of that claim, are attached hereto as an Annex following these remarks. Reconsideration and allowance of claims 1-23 in light of the amendments and arguments herein are respectfully requested.

Claims 1-6, 11-13 and 18 stand rejected 35 U.S.C. § 102(b) as being anticipated by Ogusu, et al., U.S. Patent number 5,753,809. Claims 7-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogusu, et al. Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogusu, et al., in view of Uhl, et al., U.S. Patent number 6,169,480 B1. These rejections are respectfully traversed.

The present invention defined by claims 1-23 relates to method and apparatus in a *wireless* remote tire pressure monitor system. Electromagnetic energy is used to wirelessly convey tire data from tire monitor transmitters at respective wheels of a vehicle and a radio receiver. Each wheel has a characteristic frequency response, which is defined at page 5, lines 4-8 of the present application:

> The characteristic frequency response represents the tire's inherent reaction to electromagnetic energy imparted on the tire. Some frequencies will be absorbed or otherwise attenuated by the tire. Other frequencies will be passed with little or no attenuation.

Because of the electromagnetic environment around the wheel, such as metallic strands within a runflat tire mounted on the wheel, communication of the electromagnetic energy from transmitter to receiver will be distorted. The distortion is in accordance with the characteristic frequency response.

Recognizing the existence of this distortion and its effect on reliable communication, the inventor has specified in claim 1 that the tire monitors are "configured to transmit tire data at a transmission frequency chosen in relation to the characteristic frequency response of the tire" *(emphasis added)*. Independent claims 5, 13 and 16 include similar limitations. New independent claims 21 and 22 make this even more explicit. Other claims include limitations to

more narrowly specify this operation. For example, claim 2 and new claim 22 recite that the transmission is at a transmission frequency "in a passband of the characteristic frequency response of the tire."

As noted at page 11, lines 27-31 of the present application, this design offers unique advantages over prior art systems. "By tuning the transmission frequency to the tire's frequency response, attenuation of the transmitted power of the radio signal is minimized, ensuring reliable reception of the tire data at the receiver. Further, a lower transmit power may be used in the transmitter, thus extending the battery life of the battery which powers the tire monitor."

In contrast Ogusu, et al., does not even relate to a system using radio transmission of tire data. Ogusu, et al., discloses a system using wheel speed sensors (10) for detecting rotational speed of wheels of a vehicle. A signal is provided to resonance frequency detecting units (21FR, etc.), column 7, lines 33-40; column 9, lines 22-36. The resonance frequency is dependent on the tire pressure. Estimating this resonance frequency permits estimation of the tire pressure (Abstract).

Thus, Ogusu, et al., fails to disclose "each wheel having a characteristic frequency response...to transmit tire data at a transmission frequency chosen in relation to the characteristic frequency response of the tire," as recited in claim 1 and as those terms are used in the present application. Ogusu, et al., do not choose a frequency in any manner, but merely determine a resonance frequency of a tire based on a detected wheel speed signal. Claims 13, 16 and 21 have similar limitations.

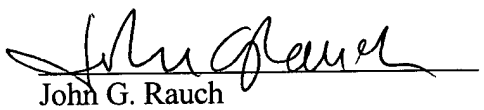
Similarly, Ogusu, et al., fails to disclose all the limitations of claims 5 and 23. Claim 5 is limited to use of "one or more transmission frequencies chosen to be within a passband of frequencies of the tire." Claim 23 includes similar limitations. As noted, Ogusu, et al., does not include any process for selection or choosing of transmission frequencies. Moreover, Ogusu, et al., does not define a passband of frequencies as that term is used in the present application.

Accordingly, withdrawal of the rejections of claims 1-20 and allowance of these claims and new claims 21-23 is respectfully requested. By this paper, claim 12 has been amended to correct a typographical error noted during review of the application. Similarly, the specification has been amended at one page to correct a noted typographical error.

With this response, the application is believed to be in condition for early action on the merits. Should the examiner deem a telephone conference to be of assistance is advancing the

application to allowance, the examiner is invited to call the undersigned attorney at the telephone number below.

Respectfully submitted,



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ANNEX

The amendments to the application, marked up to show the changes relative to the previous version, are shown below.

In the specification:

The paragraph beginning at page 12, line 1 has been changed as follows:

> While a particular embodiment of the present invention has been shown and described, modifications may be made. For example, each tire monitor may adjust its transmission frequency in response to other characteristics of the radio frequency environment in which the tire monitor operates. Further, the method and apparatus described herein may be extended to use with any type of tire, not just metallic ply sidewall tires, to thereby optimize the performance of tire monitors used with other types of tires. It is therefore intended in the appended claims to cover all such changes and modifications which fall within the true spirit and scope of the invention.

In the claims:

Claim 12 has been amended as shown below:

12. The tire monitor of claim [12] 11 wherein the predetermined model has been characterized for frequency response, the frequency response including the passband of frequencies.

New claims 21 - 23 were added as shown below.

21. (New) A remote tire monitor system for a vehicle having a plurality of wheels, the remote tire monitor system comprising:

one or more tire monitors, each respective tire monitor being associated with a wheel of the vehicle, the wheel having a characteristic frequency response to

electromagnetic energy imparted on the wheel, each respective tire monitor including

a respective tire data sensor, and

a respective radio transmitter coupled with the tire data sensor and configured to transmit electromagnetic energy to convey tire data, the respective radio transmitter transmitting the electromagnetic energy at one or more transmission frequencies chosen in relation to the characteristic frequency response of the wheel; and

a receiver configured to detect the transmitted electromagnetic energy.

22. (New) The remote tire monitor system of claim 21 wherein the respective radio transmitter transmits the electromagnetic energy at transmission frequencies chosen to be in a passband of the characteristic frequency response of the wheel.

23. (New) A tire monitor mountable inside a tire of a vehicle, the tire monitor comprising:

a tire data sensor to produce data indicative of a tire condition; and

a transmit circuit coupled with the tire data sensor to transmit tire data at one or more transmission frequencies chosen to be within a passband of frequencies of a characteristic frequency response to electromagnetic energy imparted on the tire.